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CONTINUING EDUCATION OF ADULTS.

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AGRICULTURAL EDUCATION FOR FARMERS, ORIGINALLY CLASSROOM INSTRUCTION, HAS BEEN REDESIGNED TO COMBINE ON THE JOB INSTRUCTION WITH CLASS ATTENDANCE. LOCATED IN SCHOOL DISTRICTS HAVING CONCENTRATIONS OF COMMERCIAL FARMS, MOST PROGRAMS STRESS MANAGEMENT EDUCATION AND TECHNOLOGICAL TRAINING. INDIVIDUAL INSTRUCTION TAKES PLACE DURING FARM VISITS AND A SURVEY HELPS DIAGNOSE PROBLEMS AND GUIDE THE FARMER'S ACTIVITIES. CLASSES ARE FORMED WHEN COMMON NEEDS OF TEN OR MORE FARMERS ARE IDENTIFIED AND INDIVIDUALIZED INSTRUCTION IS PROVIDED. TECHNICAL EDUCATION FOR OFF FARM OCCUPATIONS IS PROVIDED BY EMPLOYERS OR BY PROFESSIONAL ASSOCIATIONS, IN CLASSES AND ON THE JOB. THE YOUNG FARMERS ASSOCIATION GIVES LEADERSHIP EXPERIENCE IN IMPROVED FAMILY AND COMMUNITY LIVING. NEW COURSES IN OFF FARM AGRICULTURAL OCCUPATIONS MAY BECOME A MAJOR RESPONSIBILITY OF AREA SCHOOLS PROVIDED BY THE VOCATIONAL EDUCATION ACT OF 1963. FOR AGRICULTURAL TECHNICIANS, PRIMARY PROGRAM EMPHASIS SHOULD BE ON THE UNDERLYING SCIENCES AND GUIDANCE AND PLACEMENT SERVICES BECOME INCREASINGLY IMPORTANT AS EMPLOYMENT DEMANDS RISE. THIS DOCUMENT IS CHAPTER 5 IN AGRICULTURAL EDUCATION BY GLENN Z. STEVENS AND PUBLISHED BY THE CENTER FOR APPLIED RESEARCH IN EDUCATION, INC., NEW YORK. (PT)

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Agricultural Education

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CHAPTER V

Continuing Education of Adults

A complete program of education in a community is determined by the needs of all of its people at a period in time and it should be flexible in providing for the dynamic nature of the many interacting social processes. It is important in the total influence upon the future of the community that a complete program of education be recognized as that combination of desirable formal and informal educative experiences which will best promote the welfare of the individual in his family and societal functions continuously throughout life. It is believed that formal general education ought to be provided until the individual can continue to be self-educative in the broad areas of purposeful living. It has been fortunate that farm-reared boys and other rural non-farm students could begin their vocational education for agricultural occupations in the real setting of their future life work while still in high school. But, this is only a beginning; the crucial years lie ahead.

The controlling objective in long-time planning of young adult vocational education programs in agriculture is the continuous individual progress made toward becoming established in an agricultural occupation and in successful family and community living. The high school phase is a desirable preliminary period. It is difficult to find a community in which the teachers of agriculture are doing outstanding work in advising and instructing young adult farmers and other persons employed in off-farm agricultural occupations where there is anything less than a superior high school student program in agriculture. Frequent involvement in the current problems and needs of employed young adults provides teachers the very best preparation for organizing appropriate learning activities for high school students. The example of systematic instructional contacts by their instructors with adults in agricultural occupations over a period of years after completion of high school encourages younger students to approach occupational development planning with vision, confidence, and persistence.

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Adult Vocational-Technical Programs in Agriculture

During the years between the two World Wars teachers of agriculture in high schools in the United States were encouraged by their state supervisors to organize and instruct separate class groups of young farmers and others of adult farmers. The "young farmers" were defined as boys between the ages of sixteen and twenty-five who might or might not have been graduated from high school and whose occupational objective was to become established in farming. The groups taught were in part-time classes. This designation originated from the practice of scheduling classes during afternoon hours in winter months when young farm laborers and sons of farm owners were not needed for field work. Most of what was taught was concerned with the rapidly developing scientific and technical knowledge in livestock and crop production available for dissemination from the state agricultural colleges. Some of the instruction dealt with remedial aspects of general education. Gradually the emphasis moved to leadership training and to the social and civic educational needs of the young men enrolled. Assistance in placement in jobs on farms and help with advancement in occupational status were highly significant to individual students.

The term "farmers evening class" was used during the two decades from 1920 to 1940 to describe a series of meetings for farmers. These were usually arranged for by a teacher of agriculture in a rural high school. It was assumed that the men who attended had achieved satisfactory establishment in farming as owners, tenants, or managers and needed only to be brought up to date on new farming practices in order to make minor adjustments in their businesses. The men who attended were likely to be between thirty and fifty years of age. The meetings usually were scheduled at night at the high school once a week for ten to twelve weeks. In school districts that covered large areas, the meetings might be held in a neighborhood Grange hall, church basement or other community building several miles distant from the high school. The advantages to this were travel convenience for the farmers, homogeneity of type of farming, and acquaintance of the men with each other. Limitations of the effectiveness of this type of adult farmers evening class stemmed from the frequent use of guest lecturers, motion picture

films, or other visual aids borrowed for single meetings on topics not functionally or sequentially related. The teacher generally was paid only for the actual meeting hours and was unlikely to go to farms to provide individual instruction unless the family had a son enrolled in the high school classes in agriculture.

The economy of the nation was handicapped during the 1930–1940 period by unemployment, low wages and prices, and by surpluses of agricultural commodities. Incentives for mechanization, increase in labor efficiency, and expansion in the size of individual farm business were generated by the national emergency demands of World War II. Agricultural education leaders in many states prepared special course outlines for adult classes in major livestock and crop enterprises. A larger contribution during the years from 1941 to 1945 was made through enrollment of farmers in classes in farm machinery maintenance and repair. Agricultural equipment manufacturers turned out war goods rather than tractors and farm implements. Crop acreages were increased. Fewer laborers were available and wages were higher. These motivations were powerful. Outcomes of classes conducted by teachers of agriculture in high school farm mechanics shops were reported in numbers of power and machinery units serviced, repaired, or reconditioned. Of greater significance in long range evaluation were the educational results from the decision-making, management-oriented instruction that occurred in the courses inasmuch as the instructors not only taught agricultural mechanics skills but aided individual farm operators in adjusting their businesses to changing conditions.

The post-war veterans education and training program under the provisions of what was known as the GI Bill enrolled thousands of men whose educational objectives were to become established in farming. The following comments from the Report of the Panel of Consultants on Vocational Education will introduce certain features not previously a part of adult instruction in agriculture:

> Training courses were reviewed in relation to State criteria, and approval of on-the-job or formal school instruction was granted on the basis of these criteria. Many vocational teachers, coordinators, and supervisors were employed at all levels to staff the program and provide liaison with the Veterans Administration at State, regional and national levels. . . . Great impetus in curriculum development of many occupational training courses and programs undoubtedly

clarified teaching and learning of many traditional jobs and a host of the newer occupations.[1]

In trade and industrial education and in distributive education many training programs were set up on an on-the-job plan in which the employer provided the learning experiences for the trainee in his plant or other place of business. Formal school instruction conducted in public, private, or proprietary vocational education facilities was the government subsidized administrative arrangement in other training programs. Leaders in agricultural education who aided in designing the training pattern for agriculture combined on-the-job instruction and experience with attendance at regular classes. The instructor who taught the class, at least four hours per week, used the rest of his time visiting the adult students on the farms they operated or where they were employed and providing a planned sequence of on-the-job learning experiences. The demonstrated efficiency of the combination pattern of instruction later encouraged school districts to assign portions of day-time working hours of the teachers of agriculture to be used in individual on-farm instruction. Since enactment of the Vocational Education Act of 1963 the procedure is being applied to adult education for off-farm occupations.

Increased capital requirements in agricultural production, larger size of individual farm businesses in terms of animals units and acres of crops harvested, reduction in numbers of hired farm hands, and more complex involvements in marketing have focused attention on management as the prime educational need of persons who own and operate modern commercial farms and allied agricultural enterprises. Technical information relating to seeds, feeds, fertilizers, and agricultural chemicals is readily available from manufacturers and distributors of these supplies. Dealers in farm power and equipment have learned that it is very worth while for them to assist in instructing their farmer customers in the selection, safe operation and preventive maintenance of each tractor, implement or other item in agricultural mechanization and automation. Vertical integration in the marketing and processing of food and other agricultural products has brought another large segment of American business directly into educational relationships with farmers. Income tax

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[1] Report of the Panel of Consultants on Vocational Education, *Education for a Changing World of Work* OE-80021 (Washington, D.C.: U.S. Government Printing Office, 1963), p. 105.

regulations have made the keeping of complete farm accounts a necessity. All of the factors just listed, and there are more, have brought management education to the forefront in curriculum planning in agriculture.

In an Office of Education bulletin prepared in collaboration with vocational educators in states with many young adult farmers enrolled in post-high school classes in agriculture, Hunsicker presented the imperative requirements for continuing education in farm business organization and management in this way:

> When young farmers leave or graduate from high school they find soon that their needs and problems have multiplied. Those who are considering farming as an occupation will have to analyze and reexamine their interests, intentions to farm, and opportunities to become established as farmers. . . . Even those fortunate enough to start with a farm, a minimum of machinery and equipment, and a will to succeed face difficult problems and choices.
>
> As young farmers progress toward successful establishment in farming, they will recognize the need for instruction in: Developing parent-son agreements in farming, renting farm land, locating available finances, producing farm products efficiently, selecting and maintaining farm equipment, marketing farm products, keeping and analyzing records, developing farm and home plans, planning land use and conservation programs, laying out crop rotation systems, interpreting government programs, interpreting and executing legal papers, making tax returns and Social Security payments, and participating in farm and community organizations. Further education and training will develop the ability of young farmers to better solve many of their perplexing problems in these areas.[2]

To implement the foregoing concepts, a number of states gave official endorsement to "the farm management approach" to adult education in agriculture. The support was in various forms. Additional agriculture instructors were hired, time of qualified teachers was assigned to adult classes including individual instruction of students, and additional state funds were allocated to schools that conducted approved programs. The instruction has earned commendation from the men enrolled, from farm organization leaders, and from citizen groups charged with responsibility for appraisal of public school occupational education.

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[2] H. N. Hunsicker, *Planning and Conducting a Program of Instruction in Vocational Agriculture for Young Farmers,* U.S. Department of Health, Education, and Welfare, Office of Education, Voc. Div. Bul. 262 (Washington, D.C.: U.S. Government Printing Office, 1956), pp. 4–6.

The situation at present, in the mid-1960's, is such that every available technique for further improvement in management education and in technological training of commercial farm operators needs to be thoroughly applied in existing programs. An added supply of qualified teachers should be graduated to staff adult programs in more secondary schools. Specialized programs will be initiated in area vocational-technical schools as they are built with funds of the Vocational Education Act of 1963. Because most of the present vocational education programs in agriculture are located in local school districts with concentrations of commercial farms, it is likely that adult instruction in agricultural production will continue and expand in these schools. New courses for persons in off-farm agricultural occupations may become a major responsibility of the area schools.

Administrative Relationships

There may be no better evidence that a population area served by an efficient size modern secondary school system deserves to be known as an *education-oriented community* than to find that a comprehensive program of continuing adult education is in operation and enrolling, year after year, larger numbers of persons who profit from the instruction by advances in their employment status as well as in general education personal satisfactions. Having an understanding and giving approval to a basic philosophy that adults can learn and want to continue to learn is fundamental. Having an awareness that adequate physical facilities, in terms of public school buildings and equipment, are available at little extra cost is a practical consideration. Recruitment of capable instructors becomes less difficult as communities increase in proportion of residents who are college graduates and whose professional or technical employment requires that they keep up-to-date in their special fields. Finally, the chief school administrator and local board of education must be able and willing to accept leadership responsibility in organizing and administering appropriate adult programs.

In the past in rural community high schools the initiative for establishing adult classes for farmers has come from the local teachers of agriculture. They may have acted from a desire to provide the community with the quality and variety of service that had been described to them as a model in their professional training in the

state universities, or they may have recognized that former high school students urgently needed continuing instruction. In addition, persuasion of state and district supervisors of vocational education in agriculture has been a stimulus to action. Not often has the influence come from a request of the school administration that agriculture be added to an already diversified set of adult course offerings. This motivation may operate in the years ahead as area vocational-technical schools are established within commuting distance of the homes and places of employment of persons in agricultural occupations.

Whether or not an instructor organizes and successfully conducts adult classes the first year of his membership on the faculty of a school may depend on his own degree of professional maturity, vision, and sense of commitment. It may be determined by the presence of an on-going program; that he fits into it is simply expected by the school and by the adult students who have profited from previous courses and long-term individual instruction and guidance. A beginning teacher whose pre-service student teaching or internship experience has been in a school where an outstanding adult education program is in operation has greater probability of early success in his own school.

Most of the details of administration may be handled according to established policies in the school. To qualify for state financial subsidies approval must be obtained from vocational education supervisors. Explanation of local need for flexibility in interpretation of standards or requirements normally results in approval being given and may cause the innovative features to be treated as a pilot program. At a future date, dissemination to other schools of procedures found to be successful may inspire further advance in the local program.

There must be students before there is an adult program. Adult vocational education in agriculture in public schools is based on voluntary enrollment. Fees charged are low. Regularity of attendance and completion of courses depends upon student appraisal of the value of the instruction. Surveying the needs of potential students, getting to know them personally, and actualy obtaining class enrollment are, therefore, essentially as much a part of administration as of instruction.

Individual Instruction

Occupational education is clearly purposeful. It is goal oriented. The first thing a teacher should do in contacting a young adult farmer is to arrange a visit to his farm. An hour or two spent in observing the nature and scope of the total business, the combination of diversified enterprises, and the likely future development of each phase of the operation is of crucial significance. The teacher should listen as the prospective adult student outlines his personal and family goals. If the young man is single and living at home with parents, they should be involved in the conference. If married, the wife is important as a participant in the planning of an individual instruction program.

While walking over the fields, the farmer can (1) discuss the selective uses of each type of soil, (2) point out conservation practices employed and changes contemplated, (3) describe yields in terms of fertilizers, varieties and pest control, and (4) indicate rotation adjustments that might be advantageous. If the man is largely unaware of the need for making decisions in management areas such as these, the instructor may profitably make mental notes of them. Written plans ultimately become part of the teaching program. If the farm has not been enrolled in the Soil Conservation Service program and had a long-term conservation and land use plan prepared by the county work unit conservationist, the owner-operator probably will welcome the advice and help of the teachers of agriculture in taking the necessary steps. A field-by-field fertility management record system can become a key element in instructional planning.

The prospective adult class member surely will want to show the visiting instructor his livestock and explain production practices including automation as it affects labor management. Production and performance records, if kept systematically, provide a measure of efficiency in terms of standards set. Dairy Herd Improvement Association records make possible selective breeding programs. When coupled with forage analyses and concentrate feeding records, an appraisal of the nutrition program is feasible. Beef, swine, sheep, and poultry performance records are equally essential in management decision-making on farms where each is a major source of income.

Capital investments in buildings, machinery and equipment must

be kept in balance with needs for funds for operating expenses. Depreciations have to be weighed against savings in labor costs and in convenience and risk-insuring benefits. Electronic data-processing equipment used in newly-developed accounting systems makes available to farmers today a much more versatile system of alternative budgeting and assessment of results, including linear programming techniques. At present, instructors are right at the point of understanding the application of the procedures sufficiently to make computer-based accounting and business analysis a basic part of individual adult instruction.

Each individual visit has diagnostic and guidance values. Each is an initial period of instruction, a first phase in a complete cycle of the learning process. Considered as a group, with summarizing techniques applied, the result is a survey. Generalizations based on similarities as well as upon categorization of differences indicate areas of emphasis on educational needs that should guide the specification of subject matter for courses to be taught. Survey tabulations also reveal areas in which the instructor should concentrate his own effort to improve in competence.

The experience of teachers who make systematic surveys of groups of potential adult class members is that the men are quite willing to furnish answers to questions concerning characteristics including education, interests, and interpersonal relationships. They assume that the instructor will record, file, and study the data, as any other professional counselor would do, to determine ways to best serve the individual client. Standardized tests may be used; the men respond with great interest in their own relative performance. Such an experience in a voluntary situation is without reservations of the setting of an unemployed worker being processed through personnel testing.

The following set of items representing practices that apply to dairy, livestock or general farms has been used in the form of a rating scale as a part of systematic surveys with young adult farmers in about fifty schools. The instructor acting as interviewer asks the farmer to explain ten phases of the business. Together, instructor and student agree upon a rating for each item. The Likert-type summated rating scale values are: Excellent 5, Very Satisfactory 4, Satisfactory 3, Less than Satisfactory 2, Unsatisfactory 1, or Does Not Apply X. The items are:

1. Explain your system of farm records, farm budgeting and financing, and purchasing as carried out this year.
2. Explain your marketing practices, including sources and uses of market information, quality of products, and marketing methods used this year.
3. Explain your soil fertility, soil and water conservation, and land use program as in operation this year.
4. Explain the essential planting, fertilizing, and harvesting practices used in achieving your production efficiency goals for a major forage crop this year.
5. Explain the essential planting, fertilizing, and harvesting practices used in achieving your production efficiency goals for a major row crop or small grain this year.
6. Explain your insect, disease and weed control program for a major crop enterprise (forage, row crop, or small grain) this year.
7. Explain the essential breeding, feeding, and management practices used in achieving your production efficiency goals for a major livestock enterprise this year.
8. Explain your health management program for a major livestock enterprise this year.
9. Explain your program for selection, operation, and maintenance of farm power, machinery and equipment this year.
10. Explain your building construction and remodeling program in relation to labor management practices and to size and type of production enterprises this year.

It is an effective teaching procedure to repeat the survey with each student at intervals of one or two years. The reappraisal yields satisfaction in specific achievements and draws attention to unfulfilled needs or goals not yet attained. Decisions can be made to adjust the class instruction program if summarization of ratings reveals no significant advance in areas of previously less than adequate performance.

Where individual instruction is given the type of instruction must be determined by what is to be learned. Skills that require teacher demonstration and student practice usually are taught on the farm in the actual job situation. This applies primarily to livestock and crop production practices. Many skills in agricultural mechanics may be learned in the school shop, often by practicing on farm

equipment brought to the school for a few days by men enrolled in the class.

More than half of the instructor-adult student contact hours during a twelve-month period are likely to be used for discussion of management decisions. Teachers generally time their trips to farms not at hours of regular care of livestock or, unless a problem is urgent, on days of peak activity in field crop operations. As better record systems evolve, conferences with the adult agriculture instructor logically can be held at the farmer's desk, the business control center of his total operation. It may be located in the home or in the office that is part of a year-round air-conditioned farm service center.

There is a definitely growing trend toward adult at-the-school individual instruction. Self-employed farmers and persons in other off-farm agricultural businesses who have managerial responsibilities are finding it convenient and desirable to schedule appointments with the instructor at his office at the school. Often the instructional visit may be combined with another need, such as a supplies pick-up, a sales delivery, or a trip to the bank. The student should bring essential records with him. There is the advantage of ready access to the agricultural library resources of the school. The instructor is a professional; confidences are inviolate. The values of individual conferences to each adult student increase from year to year as the instructor gains in understanding of each man's educational needs.

The continuing adult education relationship with vocational educators in agriculture in the schools of a community may extend through the lifetime of the individual. This has often been the parallel situation in cooperative agricultural and home economics extension. It has been so in high school areas where effective teachers have had long tenure. But, much more has been written about how a young man may acquire a farm or other agricultural business *from* an owner than about the adjustments necessary to be made *by* the man who is approaching or who has reached retirement age. Byram had the following to say about adult guidance of older workers:

> In the last decade educators generally have become more aware of their responsibilities to those on retirement or nearing retirement. This is due in part to the growing proportion of the population who are of this age. Many questions about Social Security have arisen in farmers' minds, not so much dealing with legal and financial as-

pects as with their own personal plans and adjustments. It is not yet clear just what kind of help the teachers of agriculture could most appropriately give through consultation with retiring or retired farmers, but this problem should merit further study.[3]

To conclude this section on individual instruction of adults, the point of view is repeated that courses to be taught should arise from the common needs of perhaps ten to twenty or more adult students. It is evident that individual instruction may follow class teaching perhaps as often as individual consultations in advance of the course have helped to structure the class sessions. In fact, it is conceivable that students enroll in and attend the classes to establish and maintain the individual instruction relationship. The best local school vocational programs of agricultural education for adults have differed in at least two significant ways from the conventional stereotype of marginal offerings of unrelated one semester adult classes taught by adjunct instructors. Continuous year after year individual and class procedures and course content are adjusted to successively higher levels of achievement of persons who remain active participants and who share in planning and other phases of class organization. The instructors are regular full-time employees in established departments of schools that formally recognize occupational placement and adjustment as an institutional function and proudly appraise and report student employment, promotions, and other advances in education and status.

Class Teaching

The reasons why people attend voluntary, non-college credit adult classes are important to administrators, to coordinators of adult education programs, to instructors who must select the learning activities and use the most effective teaching procedures. Not least, they ought to be understood by the students themselves. Jensen and others[4] explained that the first interest of youth education in the schools is in socializing the child, and that the adult educator

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[3] Byram, H. M., *Guidance in Agricultural Education,* (Danville, Ill.: The Interstate Printers and Publishers, Inc., 1966), p. 188.

[4] Jensen, Gale, A. A. Liveright, Wilbur Hallenbeck, eds., *Adult Education: Outlines of an Emerging Field of University Study,* (Chicago, Ill.: Adult Education Association of America, 1964).

faces the task of re-socializing the adult. They observed that in a static traditional society adult education is redundant; there is no need to change social roles or acquire new skills. In our society, technological change demands new skills and shapes human relationships; social mobility permits and encourages changes in status, in values, and in social relationships; geographical mobility generates necessity for adaptations to different modes of living and to new economic situations. The worlds of the adult, in general order or priority, are the world of work, the social world, the world of form, and the world of nature. Vocational education skills can be clearly specified and thus efficiently learned. Social competencies need real settings, also, in which to be developed. The liberally educated adult whose occupation is in agriculture and whose social world is rural America surely will profit from conscious attention to appreciations of form and nature.

Mason and Haines[5] stated that for out-of-school youth and adults increased job competency in their present occupations or preparation for different employment comes to some degree from on-the-job training, but increasingly it comes from organized courses offered by schools and by employers and their trade and professional associations. A basic approach to program planning in adult education is the analysis of people and their occupational needs. Individuals, at one time or another in their lifetime, may need continuing adult education in preparation for a new occupation, to increase performance in the present job, in preparation for advancement, or as retraining made necessary by a variety of factors. Needs may be classified by job level into employee, supervisory, and management. Mason and Haines continued their discussion of the "needs approach" with the following:

> The coordinator engaged in adult education should be aware that some adults enroll in vocational classes to meet needs not expressed in the occupational classification already discussed. A great many people enroll to satisfy needs such as the desire to associate with other people in the same occupations; the need for stimulation to their thinking; the wish to increase status with fellow employees, supervisors, friends, and family, which comes with increasing their

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[5] Mason, Ralph E., Peter G. Haines, *Cooperative Occupational Education and Work Experience in the Curriculum,* (Danville, Ill.: The Interstate Printers and Publishers, Inc., 1965), pp. 300–302.

educational level; or the desire to gain certificates attesting to their accomplishments.[6]

Education is a function of the state. As such in a free society, it is intended to serve the purposes of the individual as well as the imperatives of the group. Individual investment of time, funds, and other resources are as much an obligation of the citizen as of government. Morgan, Holmes, and Bundy[7] said that some believe that adult learning experiences should be separated into one type labelled "adult education" and another that may be called "the education of the adult." The employment of agriculture instructors to teach courses for adult students is primarily concerned with what may be termed formal adult education. Wise planning will take into account the many informal sources of educative experiences that have shaped the personality of the individual and that should be not only passively accepted but actively built into supporting roles as teaching plans are developed. In many states supervisors and teacher educators prepare resource units as suggested guides to instructors as they perform the professional function of preparation of courses they are to teach.

Hunsicker prefaced a detailed exposition of methods and techniques that have been proven to be effective in young adult farmer classes with these statements:

> Good teaching and having members [of the class] share in the responsibility for group meetings are key factors to success in working with young farmers. An interested group of young men have been recruited, challenging objectives may have been established, and a well-planned calendar of instruction developed—yet all this work, as essential as it may be, is only preliminary to helping young farmers solve their problems. Good teaching must follow. The young farmers will need to be inspired to act and trained to make those decisions and to perform those skills in managing and operating their farms that will enable them to be successful. . . .[8]

There are certain essentials in a teaching plan. The total unit of instruction should be clearly specified and its component problem

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[6] *Ibid.*, p. 302.

[7] Barton Morgan, Glenn E. Holmes, Clarence E. Bundy, *Methods in Adult Education,* (Danville, Ill.: The Interstate Printers and Publishers, Inc., 1963), pp. 48–52.

[8] Hunsicker, *op. cit.*, p. 31.

areas delineated. The number of class sessions to be devoted to each area or topic must be determined, subject to modification during the course as progress of the group is found to be faster or slower than anticipated. The session topics or lessons should be arranged in psychological sequence. Self-evaluation devices should be used as an integral part of the learning process. With appropriate consideration for the much greater experience background of mature students, the principles of learning outlined in Chapter IV for use with high school classes apply to adult groups. Group discussion techniques are admirably suited to management problems. Demonstrations and field trips reduce misunderstanding of unfamiliar terms and confusion caused by imprecise verbalization. Chapter VI will emphasize the great variety of instructional resources available to teachers of agriculture and show how they are used in class instruction.

The Young Farmers Association

Leadership development is a very important adult education objective. Participating experiences are required to achieve it. Each individual must have real responsibilities in situations that involve personal and group goals that have value and meaning. Co-curricular activities in high school are desirable but limited to the type of social control in which teachers and parents occupy an authoritative role. A local school Young Farmers Association whose members are the persons enrolled in the post-high school classes in agriculture today serves important leadership training functions in many communities in an increasing number of states. Ohio, Virginia, Pennsylvania, Texas, Utah, California, South Carolina, and some others have had more than ten years experience with state associations of affiliated local units, that may be called chapters. Membership is open to everyone enrolled in the adult education program in agriculture in the school.

The Young Farmers Association operates with a set of by-laws, has a definite officer and committee structure, and prepares and carries out a written annual program of activities.[9] Prominent in the goals of the organization are items that support the program of class instruction; the activities relate to ways in which the members may

[9] *Handbook, The Pennsylvania Young Farmers Association* (Harrisburg, Pa.: Department of Public Instruction, 1965), pp. 18–25.

assist the teachers of agriculture with their instructional responsibilities. The Association may raise funds for teaching materials. Committees are assigned to obtain services of resource persons. Arrangements for transportation on field trips and tours are handled by the students. The executive committee is a very fine department advisory council. In a growing frequency of instances, one member accepts responsibility for individual instruction of another. This is a planned aid to diffusion of improved practices and new knowledge in the community.

A young adult student organization is related to individual on-farm or on-the-job instruction more in terms of its contribution to improved family and community living than as a requirement in instruction that leads to advance in occupational skill and efficiency. A Young Farmers Association program of work generally includes community service activities, cooperative activities and social and recreational activities. Wives of the members participate in some of the projects, meetings and events. Training received frequently results in the young farmer becoming a member and leader in state and national farm organizations and in regional civic groups.

Technician Education in Agriculture

Courses for persons employed in off-farm occupations where knowledge of agricultural subject matter is useful may be organized as a part of the adult education programs of comprehensive high schools and area vocational-technical schools in much the same manner as young farmer classes have been conducted. For many such persons the courses should provide technician education. A major difference in employment situation is that, unlike young farmers who are in the process of achieving owner-operator status, most of the potential students are wage or salary employees. The individual on-the-job phase of the instructional relationship is like that of cooperative education or work experience as in trade and industrial or distributive education programs. These vocational education services have called the instructor a coordinator, meaning that he coordinates the instruction the learner receives from the employer with the school activities. Agriculture must staff its new technician level programs in off-farm occupational specializations with highly qualified coordinators. This calls for not only advanced college

preparation of the teachers but also for them to have experience in the technical occupations in agricultural business and industry.

Having used reference to the pre-eminent position of the United States in the economical production of food and fiber and used the impact of great technological change in only the last few years to show the imperative need for highly skilled, progressive, and well-trained leaders and supporting personnel to maintain and advance our present position of unequaled efficiency, Brooking and Hunsicker defined the work of the agricultural technician by using comparative illustrations from other vocational education fields:

> In agriculture, as in other fields, the highly skilled technician is becoming an increasingly important member of the scientific and management team in modern research, development, production, and service. The team is comprised of professional (agricultural) scientists, specially trained technicians, supervisors, and skilled production or laboratory workers.
>
> Technicians are trained for employment in the physical science and engineering-related fields of electronics, mechanical design and control, civil and construction technology, chemistry and metallurgy. Others enter the life science fields, including medical and dental laboratory technology and nursing, as well as agricultural production and research. More technicians are needed in the applied biological, agricultural and allied life science technologies.
>
> The explosion of new knowledge has caused changes in scientific education so that the recently graduated professional scientist or engineer often has had little laboratory experience, and he functions more as a theoretical scientist than in the past. Thus, there is a gap in the area of applied laboratory knowledge that was formerly the domain of the scientist or engineer which is being increasingly filled by highly trained technicians.[10]

Brooking, Technical Education Specialist, and Hunsicker, Chief, Agricultural Education Service, both of the U.S. Office of Education, continued by stating that agricultural technicians work in the following types of activity:

1. *Research and development* in all branches of science and engineering as they are applied to agricultural problems.
2. *Production and related processing and marketing* of agricultural crops and products; also the culture and conservation of

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[10] Brooking, Walter J., H. N. Hunsicker, "More Skilled Agricultural Technicians Are Needed," *Agricultural Education Magazine*, XXXVIII, No. 12 (June, 1966), 276.

soil, forests, wildlife, grasslands, inland waters, and other agricultural resources.

3. *Distribution and servicing* of machinery and equipment, of supplies such as seed, feed, fertilizer, feeding or breeding stock, pesticides, and other sources as needed for production, processing, and marketing of farm products.

In the planning of programs for educating agricultural technicians, the *agricultural* or closely related occupational competencies must be identified and made the stated objectives of the program. . . . Primary emphasis should be on the underlying sciences and related technical study of procedures, processes, techniques, methods and principles. The courses should include extensive laboratory experience and should be application oriented. Each curriculum should provide courses in mathematics to the degree necessary to support the science. It should include courses in communications and technical reporting and courses which provide pertinent understanding of the applicable principles of economics, business management and cost control, and human relationships.[11]

The sequence of the subjects in a two-year technician education program should be such that first courses in agricultural specializations are taught in the first term. Many students need stimulation to sustain interest that might be lacking if, as is customary in baccalaureate programs, the first year consisted entirely of mathematics, English, social studies and introductory science. Inductively, students may be motivated to greater depth of understanding of principles as well as to higher degrees of skill application by second level courses in the essential specializations in the later semesters or terms.

Clark and Oliver,[12] in reporting on completion of a contract of the Bureau of Adult and Vocational Education, U.S. Office of Education, with the Grain and Feed Dealers Association to prepare a suggested two-year post-high school curriculum guide, arranged twenty courses into a four-semester sequence of increasing demand for management and scientific understanding. They placed "very strong emphasis on the need for occupational experience as part of

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[11] *Ibid.*, pp. 276–279.

[12] Raymond M. Clark, Alvin E. Oliver, "Post-High School Curriculum for the Grain, Feed, Seed and Farm Supply Industry," *Agricultural Education Magazine* XXXIX, No. 5 (November, 1966), pp. 108–110.

the training program." A committee of grain and feed industry leaders felt that their association and others would be happy to cooperate in providing occupational experience while the students were in the training program. They expect that the experience in their plants and stores will be well planned and well coordinated by teachers who understand and can perform capably in the occupations involved as current practice requires.

The number of specialized technician education programs must be limited in each state. Similarly, the number of universities that offer teacher education programs in each area need not be large. Divisions of four-year colleges with strong degree and research programs have the facilities and staff to offer technician education. Community colleges and technical institutes are the institutions in which greatest growth in new programs is taking place. Area vocational-technical high schools as well as many comprehensive high schools should expand their orientation toward preparation of students to enter technical education majors either in the last two years of high school or immediately following graduation.

Brooking and Hunsicker[13] pointed out that to add curriculums for agricultural technician training in an institution that already offers some programs is usually less expensive than starting such courses where no technical education is being offered. Much laboratory equipment for biological sciences may be utilized. The library and its staff already exist and need only the addition of the agriculture-related information. Instructors of communications skills, economics, human relations and other supporting courses are present and have only to adapt to the degree needed. These specialists concluded with the following reference to inservice classes for employed adults:

> The establishment of high quality programs for educating technicians pays an extra dividend by providing facilities for up-grading programs for employed adults on a part-time or evening basis. Experience has shown that most schools which offer these programs enroll a larger number of already-employed adults in such special courses than they do full-time young people in preparatory technician programs.[14]

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13 Brooking, Hunsicker, *op. cit.*, p. 281.
14 *Ibid.*

As a final note, it is appropriate to refer to adult guidance and placement services. Employment predictions for the next decade are that most agricultural businesses and industries will need more new workers with one or two years of post-high school technical education than will be prepared by the institutions that can be established within the next several years. In addition, most present employees will require advanced instruction to maintain job effectiveness.

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